

1.12

NAME Peiyuan Wang
EMAIL peiyuan.wang@oeaw.ac.at
SESSION Session 1: satellite tracking and scheduling
TYPE Presentation
TITLE Title : COTS reflectors application on Technosat

ABSTRACT

Technosat is a nanosatellite mission of Technical University of Berlin, which was launched on July 14, 2017 and has been tracked successfully by several ILRS stations. Across the 10 surfaces of the 8-edge prism satellite 14 small (10mm diameter) COTS (Commercial off-the-shelf) laser retroreflectors are distributed. Unlike specially designed retro-reflectors for usual missions, it shall evaluate the suitability of commercial low-cost reflectors for a typical 600 km orbit. SLR measurements will be applied mainly to determine attitude and attitude motion – during and after operational phase.

The COTS retro-reflectors have been measured by GFZ Potsdam; Graz characterized and simulated several different distributions of these retro-reflectors to optimize identification of satellite attitude, and to determine spin parameters after its operational / stabilized phase.

On a small mountain about 32 km southwest of Graz station we placed a wire grid model of the satellite – with various numbers and distributions of retro-reflectors - on a tripod; this satellite model was rotated by stepper motors, simulating attitude motions while we measured the distance with our 2 kHz SLR system. Simulations and these ground measurement are compared.

Basing on tracked SLR data, Graz continues studying changes and strategies of the attitudes of this mission.